

III. REMARKS

1. Claims 1 through 28 remain in the application. Claim 29 is new. Claims 1, 16, and 21 have been amended. Support for the amendments may be found in the specification, for example, on page 13, lines 12-18.

2. Claims 1-7, 11, and 16 are patentable over the combination of Thornton (US 5,847,336) in view of Stanek (US 5,936,554).

2.1. The combination of Thornton and Stanek fails to disclose a mobile phone having a keypad with an illumination means comprising light sources that are semiconductor light emitting devices made of layered foil structures for dynamically illuminating individual keys or key groups of a keypad in such a way that the illumination means is reconfigurable for different kinds of illumination effects.

These features are recited in claims 1 and 16.

Thornton illustrates a conventional technical solution for key illumination using separate light sources (LEDs) for each individual key. The layered foil structure of the present invention is not even implicitly disclosed, in fact, Thornton provides teachings to the contrary by specifying individual LEDs.

An LED based solution is hardly feasible for 21st century products. The proposed solutions of Thornton are based on mid 1990's mobile phone illumination technology that typically included 15-20 LEDs for keypad area illumination, where each LED typically consumed approximately 20 mA of current. Due to, for example, very strict low power consumption requirements, solved

by the present invention, the solutions of Thornton are no longer feasible in that time has passed them by.

As a result, the ineluctable restrictions of Thornton lead to an increase in cost, require higher power consumption, demand a higher component count, lead to a thick solution, and require a long manufacturing time. This is especially emphasized in solutions requiring an LED for each key or solutions requiring individual switching. Moreover, the illumination is tied to keys or to a display.

Stanek relates to PC computer keyboards. Stanek has no disclosure related to an illumination mechanism combined with the keypad of a mobile phone. Furthermore, the illumination mechanics and the structure of Stanek are strictly tied to LEDs. In addition, the PC's of Stanek have a stable and strong power source, the fixed power line from the electric network. This is not the case with the mobile phone, hence the requirement for a layered structure.

In contrast, the present invention teaches an implementation solution utilizing key illumination principles for improving usability and for providing some additional functionality to be used with non-standard applications, such as games.

The essential elements of the present invention are e.g. found in claim 1:

The keypad for mobile phone ... ight sources that are semiconductor light-emitting devices made of layered foil structures for dynamically illuminating individual keys or key groups of said keypad in such a

way that the illumination means is reconfigurable for different kinds of illumination effects.

And in claims 21 and 29 discussed below:

The keypad of mobile phone ... a layer including a switching function and a layered foil illumination structure for each of the plurality of keys, integrated together.

The present invention represents a beneficial cost efficient technical solution for mobile phone keypad functionality that advantageously supports mass manufacturing, low power consumption, thin phone structures, and easy configuration for key illumination. Moreover, the illumination is not necessarily tied to or associated with keys, individual keys, or a display. Additional effects may be provided for games and animation sequences.

The Applicants have realized the advantageous use of layered foil structures for portable device keypad illumination, which provides additional flexibility for implementing functions and device operations. The improved functionality of the portable device and keypad is not dependent on keys or a display but is related to layered foil structures.

For these reasons, the combination of Thornton and Stanek fails to disclose or suggest all the features of claims 1 and 16.

2.2. In addition to failing to disclose or suggest all the limitations of the claims, the combination of Thornton and Stanek fails to render claims 1-7, 11, and 16 unpatentable for at least the following reasons:

2.2.1. The technical arts are too remote or different

Thornton relates to illumination of a keypad explicitly using separate LEDs for each key. Thornton illustrates a conventional technical solution for key illumination using separate LEDs for each individual key.

OLEDs are known but are technically far removed from the cited references as such. Furthermore, none of the references disclose or suggest utilizing OLEDs with a mobile phone keypad. The suggestions of such a relationship is completely missing from the cited art.

Stanek relates to PC computer keyboards.

Thus, there are three separate and different technical fields of art present. However, they are too remote from each other, have no binding technical features, and have completely different disclosures, all of which preclude their combination. The skilled person would not look other references when starting from any of the cited references.

2.2.2. There is no reasonable expectation of success when combining the references.

There are inherent incompatibilities with the features essential to the present invention:

- The PC keyboard of Stanek does not fit a mobile phone because it is simply too big.
- The PC computer of Stanek has no relation to a mobile phone.

- The mobile phone is portable, quite small and light, and has a wireless connection. The only similarity with a PC may be the wireless connection.
- Thornton's LED based keypad structure is inappropriate for using OLEDs because the design the structure of the keypad mechanics shown in Figures 4, 6, 3 and 1 of Thornton is incompatible with OLED based layer structures. The LED (18) of Thornton is not replaceable with OLED technology. This would require significant modification of the keypad mechanics, and the instructions are missing, that is, there is no disclosure regarding how this would be accomplished.
- Thornton's LED based keypad illumination and mechanics cannot be integrated with OLED technology to achieve "a layer including a switching function and layered foil illumination structure for each of the plurality of keys, integrated together" as in the present invention. Thornton's disclosure and the subject of OLED technology relate to two separate fields of endeavor. Such a combination would require significant modification of the keypad mechanics of Thornton, and there is no disclosure or suggestion of how to accomplish this. A combination utilizing Stanek's PC keyboard is out of the question because the keyboard is absolutely too large to substitute for the keypad of Thornton.

2.2.3. The skilled person would not be motivated to make the combination.

As mentioned above, Thornton's disclosure and the subject of OLED's relate to two separate fields of endeavor. Such a combination would require significant modification of the keypad

mechanics of Thornton, and there is no disclosure or suggestion of how to accomplish this. A combination utilizing Stanek's PC keyboard is out of the question because the keyboard is absolutely too large to substitute for the keypad of Thornton.

Thus, Thornton presents no incentive or motivation for the skilled person to replace the LED's with anything else. To the contrary, Thornton's teachings are tightly related to solutions based on individual LED's and related keypad mechanics. These facts actually reduce or negate any motivation to utilize OLED's.

There is no disclosure in Stanek related to replacing LEDs with a layered structure. The last sentence of column 8 tries to vaguely broaden the means for key illumination but even that portion of Stanek fails to disclose why or how to make the layered structure and mobile phone combination. The sentence in column 8, line 65-66 that "[h]owever, the invention [of Stanek] could utilize other manners of key illumination without departing from the scope of the claims" cannot represent such an incentive or motivation without additional information.

Thus, Stanek fails to provide any incentive or motivation for a skilled person to replace the LED with anything else. Neither does it give instruction as to why nor how to replace the keyboard of the PC. To the contrary, the teachings of Stanek are tightly related to the individual LED based solution and PC keyboard mechanics of the structures disclosed therein. The disclosure of Stanek serves to teach away from any combination that includes OLEDs.

For these reasons, a skilled person would find no motivation or suggestion to combine Thornton and Stanek to arrive at the present invention.

At least for these reasons, Applicants respectfully submit that claims 1-7, 11, and 16 are patentable over the combination of Thornton and Stanek.

3. Claims 8 and 9 are patentable over the combination of Thornton, Stanek, and JP 11-126047.

Claims 8 and 9 depend from claim 1.

Like Thornton and Stanek, JP 11-126047 fails to disclose or suggest light sources that are semiconductor light emitting devices made of layered foil structures for dynamically illuminating individual keys or key groups of a keypad in such a way that the illumination means is reconfigurable for different kinds of illumination effects, as recited by claim 1.

4. Claim 10 is patentable over the combination of Thornton, Stanek, JP 11-126047, and JP 11-327509.

Claim 10 depends from claim 1.

Like the other cited references, JP 11-327509 fails to disclose or suggest light sources that are semiconductor light emitting devices made of layered foil structures for dynamically illuminating individual keys or key groups of a keypad in such a way that the illumination means is reconfigurable for different kinds of illumination effects, as recited by claim 1.

5. Claims 12-15 are patentable over the combination of Thornton, Stanek, and JP 08-148056.

Claims 12-15 depend from claim 1.

The combination of Thornton, Stanek, and JP 08-148056 fails to disclose or suggest light sources that are semiconductor light emitting devices made of layered foil structures for dynamically illuminating individual keys or key groups of a keypad in such a way that the illumination means is reconfigurable for different kinds of illumination effects, as recited by claim 1.

6. Claim 17 is patentable over the combination of Thornton, Stanek, and JP 08-265413.

Claim 17 depends from claim 16.

None of the cited references disclose or suggest light sources that are semiconductor light emitting devices made of layered foil structures for dynamically illuminating individual keys or key groups of a keypad in such a way that the illumination means is reconfigurable for different kinds of illumination effects, as recited by claim 16.

7. Claim 18 is patentable over the combination of Thornton, Stanek, and JP 06-274261.

Claim 18 depends from claim 16.

Like the other references, the combination of Thornton, Stanek, and JP 06-274261 fails to disclose or suggest light sources that are semiconductor light emitting devices made of layered foil structures for dynamically illuminating individual keys or key groups of a keypad in such a way that the illumination means is reconfigurable for different kinds of illumination effects.

8. Claims 19 and 20 are patentable over the combination of Thornton, Stanek, and JP 11-88948.

Claims 19 and 20 depend from claim 16.

Like the other cited combinations of references, this combination fails to disclose or suggest light sources that are semiconductor light emitting devices made of layered foil structures for dynamically illuminating individual keys or key groups of a keypad in such a way that the illumination means is reconfigurable for different kinds of illumination effects, as recited by the independent claims of the present invention.

9. Claims 21-25 are patentable over Stanek.

Stanek fails to disclose or suggest a keypad for a mobile phone having a layer including a switching function and a layered foil illumination structure for each of the plurality of keys, integrated together, as recited by claim 21.

As mentioned above, in Stanek, the last sentence of column 8 tries to broaden the means for key illumination to include any means. However, there is no disclosure in Stanek related to how to combine a layered structure with a mobile phone. The simple statement: "However, the invention could utilize other manners of key illumination without departing from the scope of the claims" cannot supply the requisite incentive or motivation without additional disclosure.

At least for these reasons, independent claim 21 and dependent claims 22-25 are patentable over Stanek.

10. Claims 26-28 are patentable over the combination of Stanek, Ugmark (US 6,222,466), and Thorton.

Claims 26-28 depend from claim 21.

The combination of Uggmark and Thornton fails to supply the feature missing from Stanek, a switching function and a layered foil illumination structure for each of the plurality of keys, integrated together, as recited by claim 21.

Therefore, the combination of Stanek, Uggmark, and Thornton fails to disclose all the features of claim 21 and fails to render claims 26-28 unpatentable.

11. Claim 29 is new and directed to a mobile phone including a keypad, where the keypad comprises a mechanical support structure, a plurality of keys, and a layer including a switching function and a layered foil illumination structure for each of the plurality of keys, integrated together.

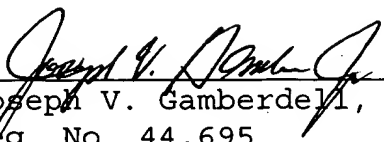
Applicants find no disclosure in the cited art regarding an integrated switching function and layered foil illumination structure for each key. At least for this reason, Applicants respectfully submit that claim 29 is patentable.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

A check in the amount of \$110.00 is enclosed for a one (1) month extension of time.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,


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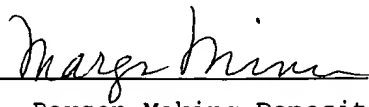
19 April 2004
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